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$$\underline{\hat{N}}_t^{(ka)} = \left(\underline{\hat{n}}_1^{Ka}, \underline{\hat{n}}_2^{Ka} \ldots \underline{\hat{n}}_Z^{Ka}\right)^T, ka = 1..Ka \quad (4)$$

a10

are ordered into in each case WB x Z matrices, estimates

$$\underline{\hat{R}}_n^{(l,m)} = \frac{1}{Z} \cdot \underline{\hat{N}}_t^{(l)} \cdot \underline{\hat{N}}_t^{(m)*T}, \qquad l,m = 1..Ka \quad (5)$$

of the temporal covariance matrices can be formed in derivation of (1). The following then holds for the estimate of the total covariance matrices:

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Paragraph beginning on line ~~34~~ 1 of page ~~6~~ 7 has been amended as follows:

NE not Found

An important advantage, which can be achieved with the method according to the invention, lies in

that, instead of possibly faulty information about the interference to be expected, the information about the interference is obtained from the actual received signal and is thus continuously updated. A further advantage lies in the possibility of obtaining information both on the spatial correlation characteristics of the interference and on the temporal correlation characteristics of the interference.

Paragraph beginning on line 5 of page 7 has been amended as follows:

a11

This information can be used either directly to suppress interference when estimating the user signals from the received signals. Alternatively, information about the directions of incidence of the interference at the receiver can be obtained from the information about the spatial correlation characteristics of the interference, depending on the signal processing algorithm. In the case of multi-antenna receivers, the information about the directions of incidence of the interference at the receiver or, respectively, about the spatial correlation characteristics of the interference can be used for generating directional patterns. The patterns,

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of which selectively have less gain in those directions from which strong interference signals arrive at the receiver, cause the ratio between useful power and interference power at the receiver end to be maximized.

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Paragraph beginning on line ~~8~~ 22 of page 7 has been amended as follows:

The previous considerations relate to the receiver end. In duplex systems, each receiver is paired with a transmitter. If multi-antenna systems are used for receiving and transmitting, the information about the received interference (obtained in accordance with the method explained above) can be used for advantageously driving the antennas in the transmitting case. The basic idea of this is that sending one's own signals into the directions from which strong interference signals are incident tends to produce strong interference in other receivers. When a number of antennas is used, therefore, the knowledge of the main directions of interference at the receiver end can be generally used, independently of the transmission system considered, to radiate as little power of the transmitted signal as possible in the directions of the main interference source and thus to reduce interference seen throughout the system.

Paragraph beginning on line 11 of page 8 has been amended as follows:

a12

The transmitted bursts include two data blocks and a midamble arranged between them which provides for the channel estimate at the receiver end. In the text which follows, the first data block of a burst will be considered in the description of the data detection. A corresponding observation would apply to the second data block. According to R. Schmalenberger, J.J. Blanz: Multi antenna C/I balancing in the downlink of digital cellular mobile radio systems. Proc. IEEE Vehicular Technology Conference (VTC'97), Phoenix, 1997, p. 607 to 611, a system matrix A can be set up which includes both the K * Ka channel impulse responses of the K subscribers to the Ka receiving antennas and the type of signal generation at the transmitter end. Together with the total data vector d, which includes the data blocks of the K subscribers, and a total interference vector n, the total received-signal vector e